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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/509,868	08/16/2005	Naofumi Ezawa	Q83993	9791
23373 7590 10/29/2007 SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037				
			EXAMINER KNABLE, GEOFFREY L	
			ART UNIT 1791	PAPER NUMBER
			MAIL DATE 10/29/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/509,868	<b>Applicant(s)</b> EZAWA, NAOFUMI	
	<b>Examiner</b> Geoffrey L. Knable	<b>Art Unit</b> 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>10-1-04; 11/21/06</u> . | 6) <input type="checkbox"/> Other: ____.  |

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1. Claims 1-3 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 1 defines that "each of rubber layers constituting the innerliner layer, the carcass layer, the rubber layer A and the rubber layer B is compounded with a rubber component, sulfur and a cobalt compound of an organic acid." This same defining language is used at several parts of the specification. The examples however seem to indicate that at least the rubber layer "A" does not have a cobalt compound therein (compounding of the innerliner is not given). These apparent conflicting representations of the scope of the invention render it difficult if not impossible for the artisan to determine which layers are to contain the cobalt compound and as such, the artisan would not be able to practice the invention without an undue burden of experimentation and/or speculation. Thus, the invention as described contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

2. Claims 1-3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

For essentially the same reasons noted in the preceding paragraph, i.e. the presentation of conflicting defining descriptions of the invention in the specification and

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examples, it is not entirely clear how to interpret the scope of "each of rubber layers constituting the innerliner layer, the carcass layer, the rubber layer A and the rubber layer B is compounded with a rubber component, sulfur and a cobalt compound of an organic acid," the scope of the claims being therefore indefinite.

3. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 09-272308 or JP 10-297209 taken in view of JP 2001-260609, JP 2614441 and Taguchi et al. (US 2002/0134480) and optionally further in view of at least one of [GB 2072576 or Connell et al. (US 2,575,249)].

JP '308 and JP '209 (machine translations are provided for each reference) each disclose tires having an innerliner layer, a carcass layer and two additional layers between the carcass and innerliner. Further, a cobalt compound is included in at least one of these intermediate layers as well as the carcass layer, it not being clear at present that the claims define over this (note above discussion with respect to the ambiguity in assessing the scope of the claims in this regard). These references do not however place particular limits on the amount of sulfur compounded into the various layers.

JP '609 (machine translation has been provided) is also directed to a tire including an innerliner to be bonded to a carcass through an intermediate ply and in particular suggests that to ensure sufficient adhesion between plies, the sulfur content in the intermediate layer adjacent the carcass should be less than or equal to that in the carcass ply and greater than that in the adjacent layer - e.g. paragraphs [0019], [0025]-[0029]. This would suggest to the artisan the desirability of providing a gradation in

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sulfur contents from the carcass ply inward in order to in part minimize the "shift" or migration tendency of sulfur from the carcass towards the adjacent layers. Optionally applied GB '576 as well as Connell et al. provide further evidence of the well known use of gradations in the ply composition blends in different layers to achieve suitable bonding between largely butyl based rubber layers (such as typical in the innerliner) and the other more typically non-butyl layers (such as typically in the carcass). JP '441 (machine translation provided by applicant) also discloses a tire having an innerliner as well as a pair of intermediate layers between the innerliner and the carcass. Further, this reference suggests that the rubber for the layer 5a (adjacent the carcass) desirably "use the same constituent as carcass code(sic) covering rubber or the rubber constituent near it" (from translation page 2 of 3), i.e. it is suggested that the rubber for the layer adjacent the carcass be the same or nearly the same as the carcass coating rubber. Using the present claim terminology, this would suggest  $S_B = S_C$  (or very close thereto). These references taken together would therefore have suggested to the ordinary artisan to provide the sulfur content in the layer adjacent the carcass ("B" in the claims) to have the same (or very close to but less) sulfur content as the carcass ("C" in the claim) to ensure adequate bonding and to further provide a compound/sulfur gradation towards the innerliner.

Taguchi is likewise directed to a tire having an innerliner as well as a layer intermediate the carcass and the innerliner and stresses the importance of appropriately controlling the amount of sulfur in the intermediate layer. In particular, Taguchi evidences an understanding that the innerliner typically has a relatively low amount of

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sulfur (0.1-2 phr - paragraphs [0027] and [0037]) and that the adjacent layer (analogous to layer "A" in the claim) should have a controlled amount of sulfur that is not so high that it excessively migrates to the liner and raises its modulus and not so low that the bonding is insufficient, amounts generally within the claimed 2-4 range being shown to be suitable and effective (e.g. paragraphs [0027]-[0031], Tables 2 and 4). Note that inclusion of a cobalt compound is also suggested (e.g. paragraph [0037]). Following the teachings of Taguchi, providing the ply adjacent the innerliner with controlled amounts of sulfur consistent with the claimed requirements would likewise have been obvious.

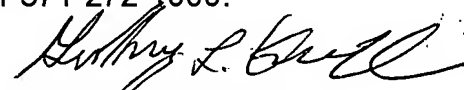
A tire as required by claim 1 is therefore considered to have been obvious. As to claim 2, the particular amount of sulfur in the layer adjacent the carcass would have been readily and routinely selected by the artisan through routine optimization, it further being noted that larger amounts of sulfur for the carcass or adjacent layers are known to be suitable and effective (see paragraph [0004] of Taguchi which indicate the conventional nature of a relatively high sulfur content for the carcass; note also apparently the last row in Table 1 in JP '441). As to claim 3, providing a gradation in sulfur content (e.g. JP '609 taken with the other cited references) would seem to reasonably be expected to lead to reduced modulus and increasing elongation with reduced sulfur content - note also Taguchi, last sentence in paragraph [0027] which suggests the known relationship between the amount of sulfur and the modulus of the rubber.

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4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Geoffrey L. Knable whose telephone number is 571-272-1220. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 571-272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Geoffrey L. Knable  
Primary Examiner  
Art Unit 1791

G. Knable  
10/25/07